**Callianax biplicata** (=Olivella biplicata)

The purple olive (Sowerby, 1825)

**Description**

*Size*—large for family: to 30 mm long (Carlton and Roth 1975); mature at 16 mm (Edwards 1968); males larger than females. Width usually about twice as high as wide (Kozloff 1974a). This specimen 18 mm high, 9 mm wide.

*Color*—gray, purple fasciole (band) at base offset with dark line (fig. 1); faint vertical striations, but surface otherwise polished, unsculptured: genus *Olivella* (*Callianax*) (Carlton and Roth 1975).

*Shell Shape*—stout, robust, sub-cylindrical; spire only slightly elevated; 5-6 whorls. Body whorl convex, nearly flat near thin straight outer lip; aperture elongate, triangular, with anterior notch (fig. 2).

*Columella*—strong callus, with a fold of 2 incised spiral lines or plications in lower portion: sp *biplicata* (fig. 2).

*Operculum*—small, horny, thin, half ovate, apical nucleus (not figured).

*Animal*—eyeless; foot plow-shaped, for burrowing (McLean 1969). Long siphon for water intake (fig. 3). Radula with 3 teeth to the row: Neogastropoda (not figured).

*Eggs and Young*—egg like a dome-shaped hat, about 0.5 mm diameter (fig. 4a). Veliger 0.2-0.3 mm (fig. 4b) (Edwards 1968).

**Possible Misidentifications**

*Callianax* species are the only genus of the family Olividae in our north temperate waters; the larger *Oliva* is a warm water genus. The genus *Callianax* may be distinguished by its smooth surface, slight spire, elongate, notched aperture, clean sand habitat, and in *C. biplicata* by its columellar folds. At least 3 *Callianax* are found on the west coast:

*Callianax baetica*, slenderer than *C. biplicata* (2 ½ x as high as wide), shell tan or cream with red, brown or purple markings and lines: it can be found on protected beaches and subtidally. It is smaller than *C. biplicata*—only up to 19 mm. It is found in Puget Sound as well as in California (Kozloff 1974a; Carlton and Roth 1975).

Callianax pycna, another small olive (to 19 mm), is stout, and has brownish zig-zag lines on its whors (Carlton and Roth 1975). It is not found in Puget Sound, but is a more southern species.

Characteristics of the family Olividae include a polished shell (indicating that the mantle often covers it), a subcylindrical, spired shell with an aperture greater than ½ the shell length. They are usually sand dwellers.

**Ecological Information**

*Range*—Vancouver Island to Magdelena Bay, Baja California: Oregonian and Californian shallow water marine faunal provinces.

*Local Distribution*—outer, marine portions of most bays and estuaries, including Coos Bay, Netarts (Stout 1976).

*Habitat*—sandy beaches and spits of bays, as well as outer coast. Can concentrate metals in tissues, apparently without harm (Morris et al 1980).

*Salinity*—full sea water.

*Temperature*—

*Tidal Level*—low intertidal to subtidal waters: lives in quite a wide band (Kozloff 1974b); found higher than and associated with the razor clam: *Siliqua patula*.


**Quantitative Information**

*Weight*—

*Abundance*—common intertidally (Carlton and Roth 1975).

**Life History Information**

*Reproduction*—dioecious (two sexes); mating behavior observed at every low tide, all year: no ‘year classes’ in Oregon waters. Mate selection by chemosensory means; internal fertilization. Only sexual dimorphism observable is larger size of males. Sterility rate may be as high as 50% due to trematode infestation. Single egg cases deposited usually on empty shells; egg development...
time variable: 10-28 days (Edwards 1968). 

**Growth Rate**—to maturity (16 mm) in one year. Males grow faster than females and are larger. Growth rate varies from 0.1 mm to 9.7 mm/year (Stohler 1969). Few young reach maturity; mostly populations of older animals, which have a low mortality rate (Edwards 1969).

**Longevity**—possibly several years: as many as ten (Edwards 1968).

**Food**—family is carnivorous; scavengers animal matter; large Callianax will eat polychaetes (Edwards 1969).

**Predators**—*Pisaster brevispinus* (Coos Bay, North Spit) (Edwards 1969): small *Cancer antennarius* and *C. magister*; shorebirds, particularly gulls; fish; man, for ornament (Stohler 1969). In southern California: mollusks *Octopus, Polinices, Conus*, echinoderm *Astropecten* (Stout 1976).

**Behavior**—reacts to predator *Pisaster brevispinus* by crawling or by rapid upside down swimming (Edwards 1969). Trails near surface. shell partly exposed. Larger animals active at night and hide from predators during the day.

**Bibliography**
Callianax biplicata

1. Callianax biplicata (anterior view, H:18mm) x4.5: about twice as high as wide; polished surface: gray with purple fasciole; stout, subcylindrical; slight spire; 5-6 whorls; long aperture.

2. Columella and aperture x12: columella with strong callus, two fold; aperture notched.

3. C. biplicata (dorsal view)

4. Egg and larva x100:
   a. egg case
   b. veliger (frontal view) (Edwards, 1968)